

Gene May Stall Fall Armyworms

A gene that directs plants to produce a protein that seems to help keep fall armyworm larvae from developing into crop-eating caterpillars has been found and isolated. Now, the world's largest vegetable seed company, Seminis, has signed an agreement to investigate the potential use of the gene to control a variety of caterpillars in broccoli, cauliflower, and other vegetables. This could help commercial growers lower the cost of pesticide inputs. Researchers isolated the protein, a cysteine proteinase, from cultured tissue of resistant corn plants and obtained a patent last November for the gene sequence that encodes it. The scientists evaluated corn hybrids with both natural and bioengineered resistance to fall armyworms in collaboration with DeKalb Genetics Corp. of DeKalb, Illinois. In lab and field tests, they evaluated hybrids developed by DeKalb using germplasm created and released by ARS as a source of natural resistance. *W. Paul Williams, USDA-ARS Crop Science Research Laboratory, Mississippi State, Mississippi; phone (601) 325-2735, e-mail pwilliams@dorman.msstate.edu.*

Developing Foods That Promote Health—A Report

A new report could help scientists in the health, nutrition, and plant sciences sharpen their focus on developing health-enhancing foods. Several of the more than 100,000 secondary compounds made by plants may play a role in reducing chronic or degenerative diseases in people. Lycopene in tomatoes, sulforaphane in broccoli, and genistein in soybeans are a few of the so-called phytonutrients that have captured headlines. But before plant scientists beef up phytonutrients in fruits and vegetables, they need to know which compounds are most beneficial and whether they work alone or synergistically—as evidence suggests they often do. To give plant scientists definitive answers, nutrition and health

scientists need better tools to measure phytonutrients' efficacy in reducing disease risk. These needs—along with the state of phytonutrient science—are discussed in a new 56-page report titled "Forum and Workshop on Food, Phytonutrients, and Health." It is the proceedings of a 1998 workshop sponsored by ARS for plant and nutrition scientists, food technologists, and immunologists, to stimulate collaboration among the disciplines. The report can be ordered from Allen Press for \$35 (includes shipping and handling): phone (800) 627-0629, fax (785) 843-1274, e-mail nutrition@allenpress.com. *Kathleen C. Ellwood, ARS National Program Staff, Beltsville, Maryland; phone (301) 504-4675, e-mail kce@ars.usda.gov.*

Blueberry Elixir Reverses Age-Related Symptoms

A diet rich in blueberry extract has reversed some loss of balance and coordination and improved short-term memory in aging rats. This is the first study to show fruits and vegetables actually reversing dysfunctions in behavior and in nerve cells. Earlier, the researchers reported that high-antioxidant fruits and vegetables prevented some loss of function in aging rats. Blueberries, strawberries, and spinach test high in their ability to subdue oxygen free radicals that can damage cell membranes, DNA, and other delicate internal machinery. Many of the dysfunctions and diseases associated with aging are blamed on oxygen free radicals. Daily for 8 weeks, researchers fed extracts of blueberry, strawberry, or spinach to 19-month-old rats—the age-equivalent of 65- to 70-year-old humans. All three improved short-term memory, but only the blueberry extract improved balance and coordination. Since motor behavior is one of the first things to go with aging, the improvements in coordination and balance are really significant; little else reversed these deficits in motor function. If this finding holds for humans, it should

further encourage consumption of fruits and vegetables high in antioxidants. *James A. Joseph and Barbara Shukitt-Hale, USDA-ARS Human Nutrition Research Center on Aging at Tufts University, Boston, Massachusetts; phone (617) 556-3178 [Joseph], (617) 556-3118 [Shukitt-Hale], e-mail joseph_ne@hnrc.tufts.edu or hale_ne@hnrc.tufts.edu.*

Homes Opened for Arctic- and Arid-Land Plants

Two new sites for conserving and managing plants important to U.S. agriculture are now open in Palmer, Alaska, and Parlier, California. The new sites join 26 others in ARS' National Plant Germplasm System that store more than 434,000 specimens of seeds and other genetic materials of crops and their wild relatives. Researchers use these germplasm materials to identify useful traits for breeding into commercial varieties. For long-term germplasm storage, it's crucial to grow the plants periodically to regenerate the seed or other reproductive tissue. Naturally, the plants grow best and produce the most seed in their native areas. The National Arctic Germplasm Site at Palmer offers a growing site for northern grasses and crops—some grains, legumes, and vegetables—that grow in high elevations or above 60 degrees north latitude. At the Arid-Land Plant Germplasm Regeneration and Genetic Resource Unit in Parlier, plants enjoy hot, dry summers and about 14 inches of rain per year. This site serves as an alternate location for other genebanks to grow out crops that benefit from a long, frost-free season or that prefer a dry area. *David M. Ianson, Curator, USDA-ARS National Arctic Germplasm Site, Palmer, Alaska; phone (907) 745-4469, e-mail david_ianson@dnr.state.ak.us. Maria M. Jenderek, Curator, USDA-ARS Arid-Land Plant Germplasm Regeneration and Genetic Resource Unit, Parlier, California; phone (559) 646-0307, e-mail jenderekm@aol.com.*